



US006256481B1

(12) **United States Patent**
Jeong et al.

(10) **Patent No.:** **US 6,256,481 B1**
(45) **Date of Patent:** **Jul. 3, 2001**

(54) **MICROPHONE CONNECTING DEVICE FOR FLIP TYPE PORTABLE TELEPHONE**

5,915,015 * 6/1999 Thornton 379/433
5,960,079 * 9/1999 Prunier et al. 455/90

(75) Inventors: **Byeong-Ro Jeong; Young-Jin Yi;**
Sung-Soo Go, all of Seoul; **Seong-Ho Ryu**, Suwon-shi, all of (KR)

FOREIGN PATENT DOCUMENTS

41 34 650 C1 10/1992 (DE) H04B/1/38

* cited by examiner

(73) Assignee: **Samsung Electronics Co., Ltd.** (KR)

Primary Examiner—Lee Nguyen

Assistant Examiner—Simon Nguyen

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days.

(74) *Attorney, Agent, or Firm*—Dilworth & Barrese, LLP

(57) **ABSTRACT**

(21) Appl. No.: **09/067,857**

A device for electrically connecting a microphone mounted on a flip cover to an audio circuit of a telephone body. The flip cover is detachable from the telephone body when an excessive force is applied thereto. A hinge apparatus includes two hinge modules each including a hinge housing, a hinge shaft having a protrusion at an end and a shaft at another end, being assembled into the hinge housing; conductive means fixedly pressed into a through hole formed along an axis of the hinge shaft; a cam hinge having opposing protrusions and opposing indents formed alternately at one side, engaging with the hinge shaft, and a through hole formed along the axis of the hinge shaft; a hinge cover mounted so as to cover an end of the hinge housing, the hinge cover having a through hole formed along the axis of the hinge shaft, through which an electric wire passes; and a coil spring intervening between the cam hinge and the hinge cover to provide an elastic force. The flip cover includes a first connection terminal having a plane surface, a curved surface and a tension part, wherein the tension part maintains electrical contact with the conductive means, the first connection terminal being installed between a neck and a knuckle; and a microphone mounted on the flip cover, being connected to the first connection terminal via the electric wire, whereby the microphone is electrically connected to an audio circuit of the telephone body.

(22) Filed: **Apr. 27, 1998**

Related U.S. Application Data

(63) Continuation-in-part of application No. 08/967,646, filed on Nov. 10, 1997.

(30) **Foreign Application Priority Data**

Apr. 26, 1997 (KR) 97-15756
Apr. 26, 1997 (KR) 97-15757

(51) **Int. Cl.**⁷ **H04B 1/38; H04M 1/00**

(52) **U.S. Cl.** **455/90; 455/90; 455/347; 455/575; 379/433**

(58) **Field of Search** 455/90, 347, 354, 455/575; 379/433

(56) **References Cited**

U.S. PATENT DOCUMENTS

5,615,259 * 3/1997 Gilbert 379/433
5,640,690 * 6/1997 Kudrna 455/90
5,692,045 * 11/1997 Takagi et al. 379/433
5,697,124 * 12/1997 Jung 379/433
5,732,331 * 3/1998 Harms 455/90
5,745,567 * 4/1998 Middleton 379/433
5,761,300 * 6/1998 Domoleczny 379/433

7 Claims, 16 Drawing Sheets

